

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No. **020431.0884**

In re Application of:

**VENKATASUBRAMANYAN ET AL.**

Serial No. **10/004,725**

Filed: **4 DECEMBER 2001**

For: **GENERATING A SUPPLY CHAIN PLAN**

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Examiner:

**BETH VAN DOREN**

Art Unit: **3623**

Confirmation No.: **1188**

**AMENDMENT**

**MAIL STOP: RCE**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir/Madam:

A Final Office Action in the subject Application was mailed to the undersigned on 23 November 2007, which provided for a shortened statutory response period ending 23 February 2008. The Applicant filed an Amendment After Final on 3 January 2008, within two (2) months of the date of the Final Office Action. An Advisory Action was mailed to the undersigned on 12 February 2008. A Request for Continued Examination (RCE) is submitted electronically herewith. Please enter the following amendments and consider the following remarks prior to examining the subject Application.

## **IN THE CLAIMS:**

A complete listing of the claims is set forth below. Please amend the claims as follows:

1. **(Currently Amended)** A computer-implemented method for generating a supply chain plan, comprising:

accessing data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

generating a linear programming problem for the supply chain network;

approximating the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

calculating an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer; and

adjusting the optimized supply chain plan to satisfy the constraint, wherein adjusting the optimized supply chain plan comprises:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

2-3. **(Canceled)**

4. **(Currently Amended)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

5. **(Currently Amended)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

6. **(Original)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

7. **(Original)** The method of Claim 1, wherein adjusting the optimized supply chain plan comprises adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

8. **(Currently Amended)** A system for generating a supply chain plan, comprising:

a database operable to store data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

a linear programming optimizer coupled to the database and operable to:

generate a linear programming problem for the supply chain network;

approximate the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint; and

calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer; and

a heuristic solver coupled to the database and operable to adjust the optimized supply chain plan to satisfy the constraint, wherein the heuristic solver is operable to adjust the optimized supply chain plan by:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

an order planner coupled to the database and operable to generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

9-10. **(Canceled)**

11. **(Currently Amended)** The system of Claim 8, wherein the heuristic solver is operable to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

12. **(Currently Amended)** The system of Claim 8, wherein the heuristic solver is operable to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

13. **(Original)** The system of Claim 8, wherein the heuristic solver is operable to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

14. **(Original)** The system of Claim 8, wherein the heuristic solver is operable to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

15. **(Currently Amended)** Logic for generating a supply chain plan, the logic encoded in a computer-readable medium and when executed by a computer operable to:

access data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

generate a linear programming problem for the supply chain network;

approximate the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer; and

adjust the optimized supply chain plan to satisfy the constraint, the logic operable to adjust the optimized supply chain plan by:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

16-17. **(Canceled)**

18. **(Currently Amended)** The logic of Claim 15, the logic operable to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a lead time constraint.

19. **(Currently Amended)** The logic of Claim 15, the logic operable to adjust the optimized supply chain plan by adjusting at least one time value of a corresponding time variable of at least one buffer to satisfy a feasible time constraint.

20. **(Original)** The logic of Claim 15, the logic operable to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a lot constraint.

21. **(Original)** The logic of Claim 15, the logic operable to adjust the optimized supply chain plan by adjusting a quantity of items of at least one buffer to satisfy a capacity constraint.

22. **(Currently Amended)** A system for generating a supply chain plan, comprising:

means for accessing data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a constraint;

means for generating a linear programming problem for the supply chain network;

means for approximating the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint;

means for calculating an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer; and

means for adjusting the optimized supply chain plan to satisfy the constraint, wherein adjusting the optimized supply chain plan comprises:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer, to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and



means for generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

23. **(Currently Amended)** A computer-implemented method for generating a supply chain plan, comprising:

accessing data describing a supply chain network comprising a plurality of buffers, each buffer being operable to store a plurality of items and associated with a corresponding time variable, the supply chain network constrained by a plurality of constraints;

generating a linear programming problem for the supply chain network;

approximating the linear programming problem by discretizing the corresponding time variables of the buffers to yield a plurality of discretized corresponding time variables and by relaxing the constraints to yield a plurality of relaxed constraints;

calculating an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer;

generating an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer; and

adjusting the optimized supply chain plan to satisfy the constraints by repeating the following until a last upstream buffer is reached:

selecting a buffer, adjusting at least one time value of the corresponding time variable of the selected buffer to satisfy a lead time constraint, adjusting the quantity of items at the selected buffer to satisfy a lot constraint, and proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer, planning production to supply the adjusted quantity of items to the selected buffer at the adjusted time value, and proceeding to a next downstream buffer.

24. **(Canceled)**

25. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items to the selected buffer using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

26. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and

proceeding to a next producer on the list.

27. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

- selecting a producer from the list of producers associated with the buffer;
- planning production to supply at least some of the quantity of items to the buffer using the producer;
- proceeding to a next producer on the list if there is a next producer; and
- planning production regardless of the list if there is no next producer.

28. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a producer from the list of producers associated with the buffer, the producers operable to supply the items to the buffer after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using the selected producer; and
- proceeding to a next producer on the list.

29. **(Previously Presented)** The method of Claim 1, wherein generating the order plan comprises repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a supply time according to the list of producers associated with the buffer, the producers operable to supply the items to the buffer at one or more supply times after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using a producer operable to supply the items at the selected supply time; and
- proceeding to a next supply time.

30. **(Canceled)**

31. **(Previously Presented)** The system of Claim 8, wherein the order planner is operable to repeat the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

32. **(Previously Presented)** The system of Claim 8, wherein the order planner is operable to repeat the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer; planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and proceeding to a next producer on the list.

33. **(Previously Presented)** The system of Claim 8, wherein the order planner is operable to repeat the following until production to supply a quantity of items to a buffer is planned:

- selecting a producer from the list of producers associated with the buffer;
- planning production to supply at least some of the quantity of items to the buffer using the producer;
- proceeding to a next producer on the list if there is a next producer; and
- planning production regardless of the list if there is no next producer.

34. **(Previously Presented)** The system of Claim 8, wherein the order planner is operable generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a producer from the list of producers associated with the buffer, the producers operable to supply the items to the buffer after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using the selected producer; and
- proceeding to a next producer on the list.

35. **(Previously Presented)** The system of Claim 8, wherein the order planner is operable to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a supply time according to the list of producers associated with the buffer, the producers operable to supply the items to the buffer at one or more supply times after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using the producer operable to supply the items at the selected supply time; and
- proceeding to a next supply time.

36. **(Canceled)**

37. **(Previously Presented)** The logic of Claim 15, the logic operable to generate the order plan by repeating the following until a last upstream buffer is reached:

selecting a buffer that requires a quantity of items;

planning production to supply the quantity of items to the selected buffer using at least some of the producers from the list of producers associated with the buffer; and

proceeding to a next upstream buffer.

38. **(Previously Presented)** The logic of Claim 15, the logic operable to generate the order plan by repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer;

planning production to supply at least some of the items to the buffer using the producer;

determining a remaining quantity of items required by the buffer; and

proceeding to a next producer on the list.

39. **(Previously Presented)** The logic of Claim 15, the logic operable to generate the order plan by repeating the following until production to supply a quantity of items to a buffer is planned:

- selecting a producer from the list of producers associated with the buffer;
- planning production to supply at least some of the quantity of items to the buffer using the producer;
- proceeding to a next producer on the list if there is a next producer; and
- planning production regardless of the list if there is no next producer.

40. **(Previously Presented)** The logic of Claim 15, the logic operable to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a producer from the list of producers associated with the buffer, the producers operable to supply the items to the buffer after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using the selected producer; and
- proceeding to a next producer on the list.

41. **(Previously Presented)** The logic of Claim 15, the logic operable to generate the order plan by repeating the following if a quantity of items cannot be supplied to a buffer by a deadline, until the quantity of items for the buffer is planned:

- selecting a supply time according to the list of producers associated with the buffer, the producers operable to supply the items to the buffer at one or more supply times after the deadline;
- planning production to supply at least some of the quantity of items to the buffer using a producer operable to supply the items at the selected supply time; and
- proceeding to a next supply time.



42. **(Canceled)**

43. **(Previously Presented)** The method of claim 23, wherein generating the order plan comprises repeating the following until production to supply a quantity of items to a buffer is planned:

selecting a producer from the list of producers associated with the buffer, planning production to supply at least some of the items to the buffer using the producer, determining a remaining quantity of items required by the buffer, and proceeding to a next producer on the list.

## **REMARKS:**

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 are currently pending in the subject Application.

Claims 2, 3, 9, 10, 16, 17, 24, 30, 36, and 42 have been previously canceled without *prejudice*.

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 stand rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 6,047,290 to Kennedy et al. ("*Kennedy*") in view of U.S. Patent Publication No. 2002/0156663 to Weber et al. ("*Weber*").

The Applicants continue to respectfully submit that *Weber*, which published on 24 October 2002, was filed on 13 July 2001. The subject Application was filed on 4 December 2001. The Applicants continue to believe, however, that the Applicants will be able to satisfy the requirements of 37 C.F.R § 131 by filing a declaration showing a completion of the present invention prior to 13 July 2001, and respectfully reserve the Applicants' right to do so in the future during the pendency of the subject Application. The Applicants also believe, however, that the present invention is not disclosed or fairly suggested by *Weber*, and therefore, traverses the rejection of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 for at least the reasons recited below.

The Applicants respectfully submit that all of the Applicants arguments and amendments are without *prejudice* or *disclaimer*. In addition, the Applicants have merely discussed example distinctions from the cited prior art. Other distinctions may exist, and as such, the Applicants reserve the right to discuss these additional distinctions in a future Response or on Appeal, if appropriate. The Applicants further respectfully submit that by not responding to additional statements made by the Examiner, the Applicants do not acquiesce to the Examiner's additional statements. The example distinctions discussed by the Applicants are considered sufficient to overcome the Examiner's rejections. In addition, the Applicants reserve the right to pursue broader claims in this Application or through a continuation patent application. No new matter has been added.

## **REJECTION UNDER 35 U.S.C. § 103(a):**

Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 stand rejected under 35 U.S.C. § 103(a) over *Kennedy* in view of *Weber*.

As discussed above, the Applicants respectfully reserve the right to satisfy the requirements of 37 C.F.R. § 131 by filing a declaration showing a completion of the present invention prior to 13 July 2001, in the future during the pendency of the subject Application. However, the Applicants believe that the present invention is not disclosed or fairly suggested by *Weber*, and therefore, traverses the rejection of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 for at least the reasons recited below.

The Applicants respectfully submit that *Kennedy* or *Weber*, either individually, or in combination, fail to disclose, teach, or suggest each and every element of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43. Thus, the Applicants respectfully traverse the Examiner's obvious rejection of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 under 35 U.S.C. § 103(a) over the proposed combination of *Kennedy* and *Weber*, either individually or in combination.

### **The Proposed *Kennedy-Weber* Combination Fails to Disclose, Teach, or Suggest Various Limitations Recited in Applicants Claims**

For example, with respect to independent Claim 8, this claim recites:

A system for generating a supply chain plan, comprising:  
a database operable to store data describing a supply chain network comprising a plurality of buffers, each ***buffer being operable to store a plurality of items and associated with a corresponding time variable***, the supply chain network constrained by a constraint;  
a ***linear programming optimizer*** coupled to the database and operable to:  
generate a linear programming problem for the supply chain network;  
***approximate the linear programming problem by discretizing the corresponding time variables of the buffers*** to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint; and

calculate an optimized supply chain plan for the approximated linear programming problem, the optimized supply chain plan describing a quantity of items at each buffer for at least one time value of the corresponding time variable and including a list of producers operable to supply the items to each buffer; and

a heuristic solver coupled to the database and operable to adjust the optimized supply chain plan to satisfy the constraint, wherein the heuristic solver is operable to adjust the optimized supply chain plan by:

repeating the following until a last upstream buffer is reached:

selecting a buffer;

**adjusting one of (a) the quantity of items at the selected buffer, and (b) at least one time value of the corresponding time variable of the selected buffer** to satisfy the constraint; and

proceeding to a next upstream buffer; and

repeating the following until a last downstream buffer is reached:

selecting a buffer;

planning production to either (a) supply the items to the selected buffer at the adjusted time value, or (b) supply the adjusted quantity of items to the selected buffer; and

proceeding to a next downstream buffer; and

an order planner coupled to the database and operable to generate an order plan by planning production to supply the quantity of items to each buffer according to the list of producers associated with the buffer.

In addition, *Kennedy* or *Weber*, either individually or in combination, fail to disclose each and every limitation of independent Claims 1, 15, 22, and 23.

The Applicants respectfully submit that *Kennedy* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a “database operable to store data describing a supply chain network comprising a plurality of buffers, each **buffer being operable to store a plurality of items and associated with a corresponding time variable** the supply chain network constrained by a constraint”. In particular, the Examiner equates the “plurality of buffers” recited in independent Claim 8 with the “buffer” disclosed in *Kennedy*. (12 February 2008 Advisory Action, Page 2). However, **the buffer disclosed in Kennedy** is merely a software object that models the management of the flow of interchangeable items in the supply chain or manufacturing plant, but **does not include, involve, or even relate to the plurality of buffers**, as recited in independent Claim 8. (Column 2, Lines 39-65). In contrast, the “plurality of

buffers” recited in independent Claim 8 ***are operable to store a plurality of items and associated with a corresponding time variable*** the supply chain network constrained by a constraint. Thus, the Applicants respectfully submit that the equations forming the foundation of the Examiner’s comparison between *Kennedy* and independent Claim 8 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 8 from *Kennedy*.

### **The Office Action Acknowledges that *Kennedy* Fails to Disclose Various Limitations Recited in the Applicants’ Claims**

The Applicants respectfully submit that the Office Action acknowledges, and the Applicants agree, that *Kennedy* fails to disclose various limitations recited in independent Claim 8. Specifically ***the Examiner acknowledges that Kennedy fails to disclose*** “that the algorithm used for the supply chain network is a generated linear programming problem, ***approximating this linear programming problem by discretizing the time variables of the buffers to yield a plurality of discretized time variables*** and by relaxing the constraint to yield a relaxed constraint, or calculating an optimized supply chain plan for the approximated linear programming problem.” (23 November 2007 Final Office Action, Page 8). (Emphasis Added). However, the Examiner asserts that the cited portions of *Weber* somehow disclose the acknowledged shortcomings in *Kennedy*. The Applicants respectfully disagree and respectfully traverse the Examiner’s rejection.

The Applicants respectfully submit that *Weber* fails to disclose, teach, or suggest independent Claim 8 limitations regarding a “***linear programming optimizer*** coupled to the database” operable to “***approximate the linear programming problem by discretizing the corresponding time variables of the buffers*** to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint”. In particular, the Examiner asserts:

Weber et al. does teaches approximating this problem using discretized variables to yield a plurality of discretized variables and by relaxing the constraint to yield a relaxed constraint and calculating an optimized solution supply plan for the approximated linear programming

problem. Weber et al. further disclose ***relaxing one of the constraints*** of this problem to be able to calculate an optimal solution, as well as both soft and hard constraints ***to the [linear programming] problem***. Thus ***the solution is approximated by the relaxation of constraints***.

(23 November 2007 Final Office Action, Page 5). (Emphasis Added). The Applicants respectfully disagree.

In support of the Examiner's conclusory assertion, the Examiner cites "Paragraphs 18, 27, 103, 120-1, and 170 and 106, 217" of *Weber* as allegedly disclosing a "***linear programming optimizer*** coupled to the database" operable to "***approximate the linear programming problem by discretizing the corresponding time variables of the buffers*** to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint". (23 November 2007 Final Office Action, Page 5). The Applicants respectfully disagree and respectfully request clarification as to how the Examiner arrives at this conclusion.

The Applicants respectfully submit that the Examiner acknowledges that *Weber* only discloses a linear programming problem (that is not ***approximating a linear programming problem***, as recited in independent Claim 8), by stating "*Weber* et al. further disclose ***relaxing one of the constraints*** of this problem to be able to calculate an optimal solution, as well as both soft and hard constraints ***to the [linear programming] problem***". (23 November 2007 Final Office Action, Page 5). (Emphasis Added). The Applicants respectfully direct the Examiner's attention to the cited portion of *Weber*:

The ***supply chain is then optimized using linear programming*** if the supply chain does not include multi-tiered pricing or a maximum number of sources for a location.

(Paragraph [0018]). (Emphasis Added). The above-cited portion of *Weber* fails to teach, suggest, or even hint at a "***linear programming optimizer*** coupled to the database" operable to "***approximate the linear programming problem by discretizing the corresponding time variables of the buffers*** to yield a plurality of

discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint”, as recited in independent Claim 8. For example, the above-cited portion of *Weber* merely discloses that linear programming is used to optimize a supply chain. (Paragraph [0018]). (Emphasis Added). However, even though the supply chain is “**optimized**” and even though the supply chain is optimized using “**linear programming**”, this “**linear programming**” **does not include, involve, or even relate to linear programming optimizer**, as recited in independent Claim 8. (Paragraph [0018]). (Emphasis Added).

The Applicants respectfully submit that it is simply not clear how the above-cited portion of *Weber* teaches, suggests, or even hints at independent Claim 8 limitation regarding a “**linear programming optimizer** coupled to the database” operable to “**approximate the linear programming problem by discretizing the corresponding time variables of the buffers** to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint” (i.e., what **linear programming problem** in *Weber* is being **approximated** and which **time variables of the buffers** in *Weber* are being **discretized**). In contrast, independent Claim 8 provides a “**linear programming optimizer** coupled to the database” operable to “**approximate the linear programming problem by discretizing the corresponding time variables of the buffers** to yield a plurality of discretized corresponding time variables and by relaxing the constraint to yield a relaxed constraint”. Thus, the Applicants respectfully submit that the equations forming the foundation of the Examiner’s comparison between *Weber* and independent Claim 8 cannot be made. The Applicants further respectfully submit that these distinctions alone are sufficient to patentably distinguish independent Claim 8 from *Weber*.

### **The Office Action Fails to Properly Establish a *Prima Facie* case of Obviousness over the Proposed *Kennedy-Weber* Combination According to the UPSTO Examination Guidelines**

The Applicants respectfully submit that the Office Action fails to properly establish a *prima facie* case of obviousness based on the proposed combination of *Kennedy* or *Weber*, either individually or in combination, and in particular, the Office Action fails to

establish a *prima facie* case of obviousness based on the “Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.*” (the “Guidelines”).

As reiterated by the Supreme Court in *KSR International Co. v. Teleflex Inc.* (*KSR*), the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966)). Obviousness is a question of law based on underlying factual inquiries. These factual inquiries enunciated by the Court are as follows:

- (1) Determining the scope and content of the prior art;
- (2) Ascertaining the differences between the claimed invention and the prior art; and
- (3) Resolving the level of ordinary skill in the pertinent art.

(Notice, 72 Fed. Reg. 57527 (Oct. 10, 2007)). Objective evidence relevant to the issue of obviousness must be evaluated by Office personnel. (383 U.S. 17–18, 148 USPQ 467 (1966)). As stated by the Supreme Court in *KSR*, “While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.” (*KSR*, 550 U.S. at \_\_\_, 82 USPQ2d at 1391).

However, it is important to note that the Guidelines require that Office personnel “**ensure that the written record includes findings of fact** concerning the state of the art and the teachings of the references applied. (Notice, 72 Fed. Reg. 57527 (Oct. 10, 2007)). In addition, the Guidelines remind Office personnel that the “**factual findings made by Office personnel are the necessary underpinnings to establish obviousness.**” (*id.*). Further, “**Office personnel must provide an explanation to support an obviousness rejection** under 35 U.S.C. 103. (*id.*). In fact, “35 U.S.C. 132 requires that the applicant be notified of the reasons for the rejection of the claim so that he or she can decide how best to proceed” and “clearly setting forth findings of fact and the rationale(s) to support a rejection in an Office action leads to the prompt resolution of issues pertinent to patentability.” (*id.*).



With respect to the subject Application, the Office Action has not shown the ***factual findings necessary to establish obviousness*** or even ***an explanation to support the obviousness rejection*** based on the proposed combination of *Kennedy and Weber*, either individually or in combination. The Office Action merely states that “it would have been obvious to one of ordinary skill in the art at the time of the invention to use the OR techniques...yielding a solution that allows user to make tactical and strategic decisions.” (23 November 2007 Final Office Action, Page 9). The Applicants respectfully disagree and respectfully submits that the Examiner’s conclusory statement is not sufficient to establish the ***factual findings necessary to establish obviousness*** and is not a sufficient ***explanation to support the obviousness rejection*** based on the proposed combination of *Kennedy and Weber*.

The Guidelines further provide guidance to Office personnel in “determining the scope and content of the prior art” such as, for example, “Office personnel must first obtain a thorough understanding of the invention disclosed and claimed in the application.” (Notice, 72 Fed. Reg. 57527 (Oct. 10, 2007)). The scope of the claimed invention must be clearly determined by giving the claims the “broadest reasonable interpretation consistent with the specification.” (See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005) and MPEP § 2111.). In addition, the Guidelines state that any ***“obviousness rejection should include***, either explicitly or implicitly in view of the prior art applied, ***an indication of the level of ordinary skill.***” (Notice, 72 Fed. Reg. 57528 (Oct. 10, 2007)). With respect to the subject Application, the Office Action has not provided ***an indication of the level of ordinary skill.***

The Guidelines still further provide that once the *Graham* factual inquiries are resolved, Office personnel must determine whether the claimed invention would have been obvious to one of ordinary skill in the art. (*Id.*). For example, the Guidelines state that ***Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art.*** (*Id.*). In addition, the Guidelines state that the proper analysis is ***whether the claimed invention would have been obvious to one of ordinary skill in the art after consideration of all the facts.*** (*Id.* and See 35 U.S.C. 103(a)).

With respect to the subject Application, the Office Action has not expressly resolved any of the *Graham* factual inquiries to determine whether the Applicants' invention would have been obvious to one of ordinary skill in the art. In addition, the Office Action fails to ***explain why the difference(s) between the proposed combination of Kennedy and Weber, either individually or in combination, and the Applicants' claimed invention, would have been obvious to one of ordinary skill in the art.*** The Office Action merely states that (23 November 2007 Final Office Action, Page 9). The Applicants respectfully disagree and further respectfully requests clarification as to how this statement ***explains why the difference(s) between the proposed combination of Kennedy and Weber, either individually or in combination, and the Applicants' claimed invention would have been obvious to one of ordinary skill in the art.*** The Applicants further respectfully submit that the Examiner is using the subject Application as a template to formulate reconstructive hindsight, which constitutes impermissible use of hindsight under 35 U.S.C. § 103(a).

The Guidelines yet further state that the "key to supporting any rejection under 35 U.S.C. 103 is the ***clear articulation of the reason(s) why the claimed invention would have been obvious.***" (Notice, 72 Fed. Reg. 57528 (Oct. 10, 2007)). In fact, the Supreme Court in *KSR* noted that "***the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit.***" (*id.*). The Court quoting *In re Kahn* (441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)), stated that "[R]ejections on ***obviousness cannot be sustained by mere conclusory statements***; instead, there ***must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.***" (*KSR*, 550 U.S. at \_\_\_, 82 USPQ2d at 1396). The Guidelines provide the following seven rationales:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of known technique to improve similar devices (methods, or products) in the same way;
- (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

- (E) “Obvious to try”—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art;
- (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

The Applicants respectfully submits that the ***Office Action fails to provide any articulation, let alone, clear articulation of the reasons why the Applicants’ claimed invention would have been obvious.*** For example, the ***Examiner has not adequately supported the selection and combination of Kennedy and Weber to render obvious the Applicants’ claimed invention.*** The Examiner’s unsupported conclusory statements that ““it would have been obvious to one of ordinary skill in the art at the time of the invention to use the OR techniques...yielding a solution that allows user to make tactical and strategic decisions” ***does not adequately provide clear articulation of the reasons why the Applicants’ claimed invention would have been obvious.*** (23 November 2007 Final Office Action, Page 9). In addition, the Examiner’s unsupported conclusory statement fails to meet any of the Guidelines rationales to render obvious the Applicants’ claimed invention.

Thus, if the Examiner continues to maintain the obvious rejection based on the proposed combination of *Kennedy* and *Weber*, the Applicants respectfully request that the Examiner provide proper support for the obviousness rejection under 35 U.S.C. 103 as necessitated by the Guidelines.

### **The Applicants Claims are Patentable over the proposed *Kennedy-Weber* Combination**

The Applicants respectfully submit that independent Claims 1, 8, 15, 22 and 23 each contain unique and novel limitations that are not disclosed, taught, suggested, or even hinted at in *Kennedy and Weber*, either alone or in combination. The Applicants further respectfully submit that claims 1, 8, 15, 22 and 23 are not rendered obvious over

the proposed combination of *Kennedy and Weber* and are considered to be in condition for allowance.

The Applicants further respectfully submit that dependent claims 4-7, 11-14, 15-21, 25-29, 31-35, 37-41, and 43 are not rendered obvious over the proposed *Kennedy and Weber* combination and are also considered to be in condition for allowance for at least the reason of depending from allowable claims.

For at least the reasons set forth herein, the Applicants respectfully submit that Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 are not rendered obvious by the proposed combination of *Kennedy and Weber*. The Applicants further respectfully submit that Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 are in condition for allowance. Thus, the Applicants respectfully request that the rejection of Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 under 35 U.S.C. § 103(a) be reconsidered and that Claims 1, 4-8, 11-15, 18-23, 25-29, 31-35, 37-41, and 43 be allowed.

**CONCLUSION:**

In view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and early reconsideration and a Notice of Allowance are earnestly solicited.

A Request for Continued Examination (RCE) is being filed electronically herewith to facilitate the processing of this deposit account authorization. **The Director is hereby authorized to charge the \$810.00 RCE fee to Deposit Account No. 500777.** Although the Applicant believes no additional fees are deemed to be necessary; the undersigned hereby authorizes the Director to charge any additional fees which may be required, or credit any overpayments, to **Deposit Account No. 500777.** If an extension of time is necessary for allowing this Response to be timely filed, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) to the extent necessary. Any fee required for such Petition for Extension of Time should be charged to **Deposit Account No. 500777.**

**Please link this application to Customer No. 53184 so that its status may be checked via the PAIR System.**

Respectfully submitted,

20 February 2008  
Date

/Steven J. Laureanti/signed  
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